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**Russia, the United States
and
Nuclear Proliferation**

Kevin D. Johnson

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**The Institute of Land Warfare
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LAND WARFARE PAPER NO. 30, SEPTEMBER 1998

Russia, the United States and Nuclear Proliferation

by Kevin D. Johnson

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Foreword

The Cold War's end presents both challenges and opportunities to American and Russian defense establishments. This is particularly the case with nuclear arms control. The role of nuclear weapons in U.S. and Russian strategy has changed dramatically. For a variety of reasons, however, the two nuclear superpowers have been reluctant to take additional steps to further reduce their nuclear forces, steps that seem warranted by the new strategic relationship between Russia and the United States. The START II Treaty, signed more than five years ago, still awaits ratification by the Russian Duma. Meanwhile, global proliferation of nuclear weapons and delivery systems continues, as recent nuclear testing in India and Pakistan so clearly demonstrates. By conservative estimate, there are more than 35,000 nuclear weapons available. The employment of a single one will have immediate, irrevocable, global consequences. Though the risk of nuclear war between Russia and the United States is decreasing, the possibility of nuclear conflict elsewhere continues to grow.

The following paper charts a course for START III. It places arms control in context by exploring the political, military and economic implications of future START reductions. The paper's conclusions and recommendations are controversial and will spark interest. The author contends that Russia and the United States can adopt new, less threatening nuclear strategies to promote fundamental deterrence and that much smaller, more survivable nuclear forces can underwrite the strategy. Only after large, permanent bilateral reductions will other nuclear states be convinced to enter into negotiations intended to limit and reduce their nuclear weapons.

In an era when our attention and resources are focused on nonnuclear issues, it is wise to keep in mind that this could be a fleeting luxury. American leadership and resolve are essential to preventing nuclear conflict. So too are new thinking and dialog on the size, structure and strategy for nuclear forces. This paper is an important contribution to that debate.

GORDON R. SULLIVAN
General, U.S. Army Retired
President

September 1998

Russia, the United States and Nuclear Proliferation

The public's brief respite from the specter of nuclear holocaust abruptly ended in May 1998 when India, 24 years after its only successful nuclear weapons test, detonated five more just sixty miles from its border with Pakistan. India then proclaimed a moratorium on further testing and announced its willingness to accede to the Comprehensive Test Ban Treaty (CTBT) as a declared nuclear power. Two weeks later, Pakistan predictably conducted its own nuclear test series. Inevitably, the detonations will prompt India, Pakistan and China to continue and if possible accelerate their nuclear programs, to the detriment of regional stability in South Asia. The tests ignited fears of nuclear conflagration that had been dampened, if not prematurely extinguished, by the collapse of the Soviet Union nearly ten years earlier. America's chimera of nuclear nonchalance, if it ever existed at all, vanished.

Nonproliferation efforts have slowed but not prevented global nuclear weapons encroachment. In addition to the seven nations that have declared and openly tested their nuclear weapons (Russia, the United States, Britain, France, China, India and Pakistan), Israel possess nuclear weapons and several other nations aspire to — Iran, Iraq, and North Korea, to name but three. The nuclear giants — Russia and the United States — have not wielded enough political, economic or military pressure to dissuade second-tier nuclear states from preserving and improving their nuclear capabilities. In some cases, Russia and the United States have even aided and abetted nuclear proliferation. Most second tier and aspiring nuclear powers confront lethal adversaries and have immutable political motivations that encourage, if not demand, nuclear weapons development. Among other things, these nations have fifty years of superpower nuclear deterrence history to inspire them. For the foreseeable future, proliferation is likely to lead to increased nuclear arms competition and instability, perhaps a regional nuclear war (whose implications can only be surmised), and only then to multilateral negotiations among all nuclear powers, with the goal of first capping and then gradually reducing stockpiles of nuclear weapons.

Prospects for multilateral nuclear reduction negotiations (MNRN) are dim. The United States and Russia each retain nuclear weapons numbering in the tens of thousands. In spite of a series of laudable Cold War arms control agreements, the disparity between U.S. and Russian nuclear inventories and those of the second-tier powers is so huge that, absent a tremendous reduction in U.S. and Russian stockpiles, meaningful near-term MNRN are impossible. Furthermore, it is improbable that any second-tier power will be persuaded to participate in MNRN as long as Russia and the United States continue to destroy ballistic missiles and bombers but not the nuclear weapons that they carry. Before calling upon other nuclear powers to join them at the negotiating table, the United States and Russia must first carry out deep, irreversible reductions in their own massive strategic and nonstrategic nuclear weapons inventories. Only then will second-tier powers perceive any advantage in accepting restrictions upon their own nuclear programs.

The future of U.S. and Russian nuclear arms reductions is uncertain. Perceiving inequities in the START II Treaty signed in Moscow more than five years ago and angered by NATO's pending expansion, the Russian Duma has heretofore refused to ratify START II. Consequently, and as a hedge against a drastic change in Russian leadership and a subsequent return to antagonistic Russian foreign policy, the United States maintains its array of heavy bombers, intercontinental ballistic missiles (ICBMs) and submarine-launched ballistic missiles (SLBMs) at quantities approaching START I levels. Both sides retain the ability to "break out" of START limits and quickly upload hundreds of additional weapons on delivery systems, ICBMs in particular. This nuclear weapons reconstitution capability is protected under START II.ⁱ

Despite indications of mistrust, the outline of a possible START III Treaty began to take shape during the March 1997 Helsinki Summit. Presidents Boris Yeltsin and Bill Clinton agreed in principle to a level of 2,000-2,500 strategic nuclear warheads, measures to improve the "transparency" of nuclear inventories, and, for the first time, destruction of the weapons themselves in order to ensure irreversible reductions.ⁱⁱ The text of the Helsinki Joint Statement appears at Appendix A.

START III negotiations are scheduled to begin upon START II's entry into force. The negotiations would require both the United States and Russia to determine how nuclear weapons contribute to, and perhaps detract from, their national security in vastly changed strategic circumstances. During the Cold War, thousands of nuclear weapons underwrote virtually all U.S. vital interests.ⁱⁱⁱ Today, nuclear forces play an important but nevertheless different and greatly diminished role, as recent changes to U.S. nuclear strategy attest.^{iv} In its December 1997 report, the National Defense Panel (NDP) asserted that effective deterrence can be maintained at START III levels and even lower.^v This assessment, combined with the nuclear arms race in South Asia and Russian economic and military woes, may prompt Clinton and Yeltsin to seek even greater permanent reductions in START III, perhaps as low as 1,500 or 1,000 deployed warheads. Implementation of START III reductions on this scale, combined with progress on negotiating reductions in nonstrategic nuclear arms, could conceivably prompt MNRN.

This paper seeks to chart a course for START III. It is assumed that the United States and Russia will negotiate a strategic arms agreement based on the Helsinki framework, regardless of whether or not START II is implemented. This paper maintains that post-Cold War geopolitical, economic and military realities enable the United States and Russia to adopt complementary strategies of "fundamental deterrence." This evolutionary strategy emphasizes defensive retaliation and much smaller, more survivable forces, in place of the dangerously competitive, offensive warfighting doctrines and huge, destabilizing nuclear arsenals that characterized the latter years of the Cold War. The paper recommends draft provisions for a START III treaty that are consistent with fundamental deterrence and the Helsinki accords.

Achieving fundamental deterrence and implementing the Helsinki principle of irreversibility are impossible if the United States and Russia are determined to retain massive strategic nuclear reconstitution capabilities. Given present U.S. relations with Russia, and in view of the compelling need to prevent nuclear accidents and slow proliferation, transparency and irreversibility are more important than reconstitution. Should relations with Russia take a turn for the worse and reverse this proposition, then the United States should not negotiate START III.

It is no longer necessary to rely upon a strategic triad (ICBMs, SLBMs and bombers) to underwrite U.S. vital interests. The triad's legs, products of Cold War technological constraints and arms control restrictions that were once complementary, are now increasingly and unnecessarily redundant. Under START III and beyond, the triad will consume more Department of Defense budget dollars, on a cost-per-warhead basis, due to an increasing share of operations, maintenance and modernization costs. Fundamental deterrence does not require a triad, nor large numbers of nuclear weapons. Today, U.S. nuclear forces serve to deter the use of weapons of mass destruction by sovereign states. They have very limited utility against other threats.

Recognizing the diminished but still important role of nuclear weapons in U.S. security, encouraged to continue nuclear arms reductions to the point where other nuclear powers may participate in MNRN with the United States and Russia, and mindful of the desirability of adopting mutual strategies of fundamental deterrence, START III should:

- ◆ be negotiated in conjunction with separate bilateral negotiations on nonstrategic nuclear weapons;
- ◆ commit Russia and the United States to a two-stage reduction schedule, first to 2,000 and then 1,000 deployed strategic nuclear warheads;
- ◆ permit SLBM multiple, independently-targetable reentry vehicle (MIRV) reduction;
- ◆ prohibit the most vulnerable, destabilizing and dangerous delivery system: undefended, fixed ICBMs. Mobile ICBMs, deployed with one warhead, should be permitted;
- ◆ require destruction of nuclear weapons associated with START-reduced delivery systems;
- ◆ set limits on strategic nuclear weapons inventories, including nondeployed weapons.

To achieve these reductions and restrictions, Russia and the United States must overcome decades of Cold War-vintage force structuring prejudice and the inertia of obsolete warfighting strategies. One of the most enduring vestiges of that era is the notion that the U.S. nuclear deterrent inherently depends upon a triad of delivery systems.

The Triad, Arms Control and Cold War Deterrence

Until the USS *George Washington* (SSBN 589) conducted the first test launch of a U.S. SLBM off the Florida coast in 1960, the United States relied upon bombers and then ICBMs and bombers to deter nuclear and conventional war with the Soviet Union.^{vi} Important changes were also being made to U.S. nuclear strategy. During the Eisenhower administration, there was a strong sense that military victory in a nuclear war was impossible. Defense Secretary Robert McNamara made three key changes to U.S. nuclear strategy: He proposed quantifiable criteria for fighting a nuclear war, enshrined survivability as an essential characteristic of U.S. nuclear forces, and sought to provide decisionmakers with a range of military options to respond to the hostile use of nuclear weapons. The Kennedy administration's graduated response policy ushered in a warfighting strategy for nuclear weapons. The strategy's goal was systematic and clear. U.S. nuclear forces were to be structured to withstand a preemptive Soviet attack and still be able to inflict a devastating counterattack. Damage criteria were straightforward: eliminate 50 percent of Soviet industrial capacity and 25 percent of the Soviet population.

To achieve these levels of damage, U.S. weapons and command and control systems had to be survivable. To that end, the United States made large investments in both the hardened-silo Minuteman and submarine-based Polaris missile programs. Half of Strategic Air Command's bombers were maintained on alert, so they could disperse in the event of an attack warning.^{vii} SLBMs did not comprise a significant proportion of U.S. strategic weapons until the 1970s. The Soviet Union developed its own triad, featuring a large ICBM force, in response to the United States. The U.S. triad of heavy bombers, ICBMs and SLBMs came into being relatively late in the Cold War, but it underwrote U.S. vital interests until the demise of the Soviet Union.

Initially, U.S. triad legs were complementary. Each possessed distinct advantages and drawbacks, largely a result of technological limits. As the limits were overcome, the characteristics of the weapons changed, and triad legs became increasingly redundant. Early ICBMs were accurate, had long range and large payloads, but were vulnerable in their fixed silo launchers. SLBMs, while more survivable, were less accurate and of shorter range. Both were able to strike their targets rapidly, with little warning. Bombers, though not as quick to the target and vulnerable to air defenses, could be dispersed and recalled after launch. Compared to ballistic missiles, bombers contributed to stability between the superpowers during crises.

Equipping ballistic missiles with MIRVs further distinguished triad legs. Heavily MIRV'd, vulnerable ICBMs became hair-trigger "use or lose" weapons that invited a disarming first strike. Hardening silo-launchers and deploying ICBMs on mobile launchers served to increase their survivability and simultaneously complicate the targeting problem for the other side by requiring the planned use of additional weapons to increase the probability of target kill. MIRV'd SLBMs, of increasing accuracy and range, enabled the

United States to deploy more of its strategic weapons at sea. This diverted some Soviet targeting away from U.S. soil and caused the Soviets to build successive classes of attack submarines to stalk U.S. SSBNs. Improvements to heavy bombers and bomber weapons increased air defense penetration capability, stand-off range, and hence survivability. Short-range attack missiles and air-launched cruise missiles augmented or replaced nuclear gravity bombs. Thus grew an expensive and dangerous strategic arms race, a defining characteristic of the Cold War.

Distributing nuclear weapons across multiple delivery systems was necessary in view of the early technical limits of individual delivery modes. But the triad also increased the credibility of the strategic force by ensuring that a critical failure or unexpected vulnerability of one leg could be offset by the others. Redundancy was reassuring during that period of the Cold War when offensive nuclear warfighting was the chosen strategy, and the weapons behind the strategy were new and sometimes of uncertain reliability. On rare occasions individual triad legs suffered temporary breakdowns. But the longer the triad remained in place, the stronger grew the mystique surrounding it.^{viii}

At the height of the Cold War, the superpowers acknowledged both the cost and the risk of their arms race and undertook a series of bilateral negotiations, which resulted in several arms control agreements. The 1972 Anti-Ballistic Missile (ABM) Treaty helped restrict the arms competition — and expenditures — primarily to offensive forces by setting strict limits on ballistic missile defenses. Although the Strategic Arms Limitation Treaties (SALT I in 1972 and SALT II in 1979) failed, for various reasons, to limit or reduce offensive forces, the negotiations helped frame the nuclear debate between the superpowers. Negotiations led to better understanding of mutual problems and interests and institutionalized a legally binding process that, in view of their obligations under the Nuclear Nonproliferation Treaty, neither the United States nor the Soviet Union could back away from.^{ix}

In 1987, Presidents Ronald Reagan and Mikhail Gorbachev signed the Intermediate-Range Nuclear Forces (INF) Treaty, eliminating an entire class of nuclear weapons delivery systems and signaling an important change in the superpower relationship. The intrusive INF compliance verification regime remains a landmark Cold War achievement.

The Conventional Forces in Europe Treaty, signed in 1990, perhaps best symbolizes the end of the Cold War. By bargaining away most of its three-to-one conventional superiority over NATO, the Soviet Union tempered one of the two primary justifications for massive, offensive U.S. nuclear forces. No longer would the prospect of sudden, large-scale conventional war with the Warsaw Pact loom so large that it had to be countered by threat of a massive U.S. nuclear response.

The triad's second justification, deterring nuclear war with the Soviet Union, was rendered less compelling by yet another arms control accomplishment. The 1991 Strategic Arms Reduction Treaty (START) capped strategic nuclear forces at no more than 1,600 delivery systems and 6,000 treaty-accountable "warheads" for each side. The 6,000 limit was calculated by means of counting rules that attributed a specific number of nuclear warheads to each type of deployed ICBM, SLBM and heavy bomber. In treaty language, "warhead" is more of an accounting than a military or technical term.

START counting rules sought to change the composition of strategic forces by treating different classes of delivery systems differently. Recognizing that ICBMs comprised the most dangerous class of strategic weapons, START I established ICBM-specific warhead sublimits. To comply with the sublimits and still deploy the maximum number of allowed warheads, both sides would increasingly rely on SLBMs and bombers. A bomber weapon discount rule provided numerical incentives to shift more weapons to bombers. Under START I, an entire load of nuclear gravity bombs counts as only one treaty-accountable "warhead."

START featured an intrusive verification regime patterned on the INF precedent. After the implosion of the Soviet Union, it became necessary to implement START reductions within three newly independent, nuclear-armed former Soviet republics: Belarus, Ukraine and Kazakhstan. The former republics relinquished their nuclear weapons and each became a signatory to the Nonproliferation Treaty, decreasing the risk of nuclear theft or accident.

Although signed in 1993, after the collapse of the Soviet Union, START II is essentially an extension of the Cold War START Treaty. If and when it enters into force, START II would further reduce strategic forces to between 3,000 and 3,500 accountable warheads. START II prohibits MIRV'd ICBMs, places new sublimits on SLBMs, and eliminates the bomber weapons discount rule. The United States will sacrifice its newest class of ICBM, 50 MIRV'd Peacekeepers, in exchange for elimination of all 154 Russian SS-18 heavy ICBMs. (Probable U.S. and Russian strategic force configurations under START II are shown in Appendix B.)

While the START treaties affect significant reductions in delivery systems, they do not require that nuclear weapons themselves be eliminated. Consequently, both sides retain thousands of nondeployed nuclear weapons, which pose a significant threat of cheating, treaty breakout and subsequent nuclear forces reconstitution. At Helsinki, the United States and Russia agreed to include in START III provisions regarding transparency of strategic nuclear weapons inventories and weapons destruction. Arguably, these goals are vastly more important and will be more difficult to achieve than the further reduction of deployed delivery systems alone.

During the latter stages of the Cold War, arms control treaties shaped strategic forces and, coupled with technical progress, began to blur triad leg distinctions: weapons loadouts, range, accuracy, and strategic stability in particular. START II-restricted ballistic missile forces would be very different from their most recent Cold War predecessors. Vulnerable silo-based ICBMs, as well as much more survivable mobile ICBMs, will carry but one warhead each, as did the very first ICBMs and SLBMs. SLBMs will continue to feature MIRVs, exceptional accuracy and increased range that can enable SSBNs to strike many targets while still in port — characteristics once unique to ICBMs.

Technology and treaties have forever changed the nature of the triad. There is no longer any compelling technological necessity for the United States to maintain three distinct strategic nuclear weapons delivery means. Commenting about the future of the triad in view of pending and prospective arms control agreements, the commander of U.S. Strategic Command recently acknowledged that “at some point it [his position] will have to fall off the triad.”^x One remaining justification for the triad is its potential, largely manifested in the vulnerable ICBM leg, to reconstitute several hundred additional nuclear weapons in the most extreme circumstances. Maintaining that potential is inconsistent with the Helsinki principle of irreversibility. Realizing that potential would require the United States to break out of START in recognition of its supreme national interest. That scenario, while frightening, is improbable and can be made more so by consideration of the post-Cold War environment and implementation of appropriate arms control measures.

National Interests and the Changing Threat

The post-Cold War era is greatly different from the military and political climate that forged U.S. and Soviet nuclear forces from 1945 to 1989. Anticipating START III negotiations, the United States must refine its nuclear strategy and review its force structure requirements in light of this new environment. The evolving security environment also affects the prioritization of U.S. interests.

U.S. vital interests continue to be the survival of the United States as a free and independent nation, a healthy and growing U.S. economy, and a stable and secure world.^{xi} Previous emphasis on superpower deterrence has been overshadowed by concern about accidental or inadvertent use of nuclear weapons, regional conflicts, and operations other than war. U.S. economic concerns have increased in relative importance. Today the United States faces challenges requiring the reallocation of budget dollars from strategic nuclear to conventional forces and to domestic programs.

Four developments have combined to reduce the strategic nuclear threat: first, the decreased role of nuclear weapons in protecting U.S. interests; second, the drastic Russian economic downturn since 1990 and its impact on military readiness; third, reductions in U.S. and Russian weapon systems due to implementation of nuclear arms control agreements; and finally, the failure of any other nation to significantly increase its nuclear arsenal to a level approaching that of the United States or Russia.

While the threat of general nuclear war has subsided, the potential for an accidental or inadvertent launch remains real. In January 1995, a test rocket was launched from Norway to study the Arctic atmospheric condition known as the Northern Lights.^{xii} As the rocket climbed, it was detected by the Russian early warning radar system. Within a few minutes, President Yeltsin had to determine whether the rocket signaled an attack on his vulnerable ICBM force, since it demonstrated parameters similar to a SLBM, or whether it could be explained by some other reason. Though Yeltsin chose correctly, this episode demonstrates that reliance on "use or lose" nuclear weapons places even greater pressure on decisionmakers during crises. Indian and Pakistani nuclear testing heightens concern about accidental and inadvertent nuclear use in South Asia.

The United States has embarked on investments in high technology that could further lessen its need for nuclear weapons. One initiative is to provide a nonnuclear deterrent against weapons of mass destruction, which would add a superior option to the present policy of relying upon nuclear weapons to deter the use of nuclear (as well as biological and chemical) weapons by other states.

Expensive, high technology alternatives to nuclear weapons do not appear to be possible for Russia, whose Gross Domestic Product (GDP) global ranking fell from 39th to 99th between 1990 and 1996.^{xiii} For want of funds, Russia has great difficulty in maintaining and modernizing its nuclear forces. Some of the Duma's reluctance to ratify START II is due to fear that Russia cannot afford to comply with the treaty and should therefore retain MIRV'd ICBMs, long the mainstay of Soviet and now Russian strategic forces. Russian leaders have suggested that future defense expenditures should be capped at 3.5 percent of GDP, or less than 16 billion U.S. dollars.^{xiv} Russian economic problems are driving even more massive military cuts than is the case in the United States.

Increasing outlays for Russia's strategic forces is not realistic, even though many of its strategic nuclear weapons are reaching the ends of their useful lives.^{xv} Russian experts recently decried the perilous condition of some liquid-fueled SLBMs, which are so old that both their reliability and safety are doubtful. E.V. Miasnikov of the Moscow Institute of Physics and Technology found that "an analysis of the situation in Russia's Strategic Nuclear Forces shows that even supporting the level of 3,000 warheads during Russia's current economic difficulties and the existing budget financing practices is hardly feasible."^{xvi} Colleague Paul Podvig contends that Russia can technically support a force of 3,500-4,000 deployed warheads by 2008, but only if the Duma refuses to ratify START II and instead modernizes MIRV'd ICBMs. Elimination of MIRV'd ICBMs would nearly halve Russia's strategic arsenal to levels far below those allowed under START II.^{xvii} Because of its faltering economy, Russia is unlikely to pose an immediate or near-term threat of technological breakthrough in either strategic offensive or defensive forces.

Britain and France have both reduced the size of their nuclear forces and now rely exclusively on SSBNs for nuclear deterrence. China's arsenal of about 300 to 400 nuclear weapons contains about 40 capable of reaching the United States.^{xviii} While China is spending a great deal of money to develop its military capabilities, it will take at least a decade for China to become a large nuclear threat to the United States — even at lower

U.S. force levels envisioned for START III.^{xix} Much more disturbing is the potential for regional nuclear conflict between Russia and China, China and India, and especially India and Pakistan in light of their long-standing animosities and border conflicts.

Summarizing the post-Cold War environment in February 1997, the Director of the Defense Intelligence Agency said:

The threats facing the United States have diminished an order of magnitude and we are unlikely to face a global military challenger on the scale of the former Soviet Union for at least the next two decades. . . . We will not likely see a global 'peer competitor' within 20 years.^{xx}

Russia is in a quandary. While the risk of nuclear war with the United States is lower than before, Russian reliance upon nuclear weapons is increasing. There reverberates in Russia a desire to remain a great power, and nuclear weapons symbolize that stature.^{xxi} Recent renunciation of the "no first use" pledge, long a component of Soviet policy, indicates increased Russian concern about conflict with other powers. Anatol Lieven characterized the emotional mood of the country this way: "Every Russian with a sense of history ought to go down on his knees every morning and thank his or her God for the existence of nuclear weapons."^{xxii} In the view of many Russians, it is nuclear weapons alone that prevent other nations from capitalizing on Russian weakness.

Russia cannot afford to sustain its strategic forces at START I levels, but likewise cannot afford the additional single warhead ICBMs it would require to fully deploy a START II-compliant strategic force. Without START II and III, Russian strategic forces are likely to shrink to less than 2,000 deployed warheads. But absent START restrictions, it is probable that future Russian nuclear arsenals will devolve along destabilizing and potentially dangerous paths. Promoting Russian security while pursuing further reductions in strategic nuclear forces is in America's national interest. Merely extending the old START approach is not enough, however. START III must promote less threatening nuclear strategy and recast the qualitative nature of U.S. and Russian nuclear forces.

Fundamental Deterrence

United States Nuclear Policy

U.S. nuclear policy has as its primary objectives to reduce the threat of Russian nuclear forces, in the near term by compelling the Duma to ratify START II, and to prevent (or at least slow) global nuclear proliferation. With regard to the Duma, a carrot-and-stick approach has recently been employed. At the Helsinki Summit, President Clinton offered incentives for the Duma to ratify START II by extending the schedule of reductions (which will require the U.S. Senate to reconsider the treaty), outlining a START III framework, and agreeing to measures intended to ensure irreversibility of reductions by means of nuclear weapons destruction and inventory visibility.

In April 1997, Defense Secretary William Cohen emphasized the stick in his annual report:

The political situation in Russia remains volatile and uncertain; a return to a foreign policy hostile to the United States is a possibility. Hence, while the threat of massive nuclear attack on the United States is lower than it was during the Cold War, there is still a valid need to maintain substantial strategic nuclear forces.^{xxiii}

What is more, Cohen made clear that the United States required a capability to "reconstitute adequate additional forces in a timely manner if conditions require," and that the United States would "protect options to maintain its strategic capabilities at START I levels until the START II Treaty has entered into force."^{xxiv}

Cohen's 1998 report features both the carrot and the stick. Its tone is less strident than the 1997 edition. Rather than specifically identifying Russian political instability as a source of worry, the report characterizes U.S. strategic forces as "a hedge against the uncertain futures of existing nuclear powers," praises bilateral threat reduction efforts, and endorses the Helsinki Summit accords as the blueprint for START III. But Cohen also restates the need for options that would preserve U.S. strategic forces at START I levels should the Duma fail to ratify START II, and pointedly includes a \$57 million budget estimate for that purpose through FY 1999.^{xxv}

The United States is understandably concerned that the Russians, who are reluctant to ratify START II, possess large numbers of nonstrategic nuclear weapons, continue to produce fissile materials, and manufacture nuclear weapons, enjoy a reconstitution capacity that the United States does not. Consequently, the United States seeks its own reconstitution hedge in the form of reserve weapons and, until Helsinki, excluded nuclear weapons elimination from START. Though START II would reduce the number of delivery vehicles by roughly 30 percent, the United States and Russia would retain their associated nuclear weapons and the capability to return many of them to a deployed status if necessary. ICBMs, which suffered the greatest reductions as a consequence of START I and II, offer the greatest U.S. reconstitution potential because they can be quickly uploaded with additional weapons. Limiting U.S. reconstitution is at the heart of Yeltsin's advocacy of "irreversibility" and "transparency" as fundamental principles for START III.

There are important contradictions in the U.S. hedge approach, with START III implications. On the surface, President Clinton expresses confidence in future U.S.-Russian relations by addressing Russian irreversibility concerns and offering additional nuclear reductions, while Secretary Cohen implies that Russian political uncertainty requires the United States to be able to break out of START restrictions. More specifically, protecting a large ICBM reconstitution potential requires retention of nuclear weapons and associated hardware after their delivery systems are eliminated, contrary at least to the spirit and public image of START. While one can envision START III provisions that would require weapons destruction while protecting some reconstitution capability, particularly in the bomber force, the Helsinki principle of irreversibility stands in stark contrast to a continued, ICBM-based reconstitution hedge.

Breakout and reconstitution have long histories in superpower negotiations. For years, the United States sought to prevent or limit the Soviets from doing precisely what the Defense Department now implies is important for the United States: to abandon START

and quickly reconstitute additional nuclear forces. When reconstitution is fully considered, ICBMs assume yet another disturbing and destabilizing dimension. Should a crisis develop between the United States and Russia and take on such immense proportions that reconstitution is ordered, the United States would be forced to place the bulk of its reserve weapons upon its most vulnerable delivery system — fixed, undefended ICBMs. That would create a tremendous first-strike incentive for Russia at the worst possible time.

Besides the historical contradiction and crisis stability concerns, protecting reconstitution bodes ill for START III. The United States must either curb its reconstitution hedge and commit to nuclear weapons destruction or walk away from the Helsinki Summit agreements. The latter course would doom START III. However, if the Russian threat demands retention of large-scale, ICBM-based reconstitution potential, then the United States should not exacerbate or complicate reconstitution by further reducing its strategic forces. The United States should not negotiate a START III treaty if substantial reconstitution is deemed vital to national security.

Presently it appears that nuclear proliferation, covert fissile material transfer, unauthorized launch, nuclear accident and weapons theft are more likely and more immediately dangerous to U.S. security than a revisionist change in Russian government and subsequent breakout from the START regime. In any event, U.S. nuclear policy can more directly address the first problems than prevent the latter. There is key linkage between START III and the two basic objectives of current U.S. nuclear policy: ratification of START II and the prevention of further nuclear proliferation. Retention of a large U.S. reconstitution potential under START III, if possible at all, would likely result in Russia's doing the same, to the detriment of nonproliferation objectives and national security. It is highly unlikely that other declared nuclear powers will be persuaded to participate in future MNRN as long as Russia and the United States destroy missiles and bombers, but not nuclear weapons.

Resolution of reconstitution and weapons destruction issues requires additional arms control measures beyond those now envisioned strictly for START III. Many U.S. concerns (such as SLCMs and Russian nonstrategic weapons) lay outside the bounds of START and should remain so for the time being. Once START III negotiations commence, the United States and Russia should also begin bilateral negotiations to reduce their stockpiles of nonstrategic nuclear weapons. As the total number of nuclear weapons decreases, Cold War distinctions between them based on delivery system range become increasingly meaningless. Some in the United States will insist upon retaining a strategic forces reconstitution hedge to offset large numbers of currently unrestricted Russian nonstrategic nuclear weapons. The connection between the two is clear and could serve as an inducement to take steps beyond INF Treaty landmarks. Fissile material production agreements would also ease reconstitution worries, as would continuation of the Nunn-Lugar program. Such efforts are outside the START regime proper and should remain so until nuclear reductions reach the point where further negotiations can occur in a multilateral venue.

Nuclear Weapons Utility and Nuclear Strategy

Although tempered by confidence-building measures (such as dealerting, detargeting and deactivating) enacted by the Bush and Clinton administrations, U.S. nuclear strategy retained most of its Cold War character, at least publicly, until late 1997. In April 1997, Secretary Cohen summarized the strategy in these words:

The mission of U.S. strategic nuclear forces is to deter aggression against the United States or its allies and to convince potential adversaries that initiating an attack would be futile. To do this, the United States must maintain survivable nuclear forces of sufficient size and capability to hold at risk a broad range of assets valued by potentially hostile foreign powers.^{xxvi}

The strategy's key ingredients were a decapitation threat to Soviet political and military leadership and a disarming threat to its nuclear and conventional forces and infrastructure. Prosecuting the strategy required detailed planning, robust and survivable command and control, large numbers of offensive weapons to ensure complete target coverage and high kill-probability, redundant systems to compensate for damage and malfunction, and strategic reserves for retaliation and second strikes: in short, a nuclear warfighting strategy.

Warfighting strategy combined denial and punishment. Along with U.S. refusal to adopt a no-first-use pledge, it denied the Soviets certainty of success of any military alternative. By credibly threatening the Soviet government and military establishment, the strategy promised to punish Soviet aggression by striking at the heart of the state. To a lesser extent, the strategy was a warning to China.^{xxvii} In retrospect, the strategy served the United States well. It deterred general war with the Soviet Union and Warsaw Pact, although it did not prevent (and may have encouraged) military entanglements elsewhere.

But what application does this strategy have today? Current Russian political leadership is preferable to almost every feasible alternative; our intent is to support, not threaten, it. Former Warsaw Pact satellites are vying for NATO membership. Russian conventional forces are in disarray, qualitatively inferior to those of the United States and its allies. Russian nuclear forces, while still very capable, are aging and smaller as a consequence of Russian budget woes, arms control and the dissolution of the Soviet Union.

In today's global environment, U.S. nuclear weapons have much less utility, and nuclear strategy must be crafted with this in mind. This is because the Cold War's end manifestly decreased the threat to U.S. interests, and those interests themselves have a new complexion. Today, nuclear weapons serve to deter the use of weapons of mass destruction by sovereign states against the United States and its allies. But they have only marginal utility against other, more probable dangers. The role of nuclear weapons in U.S. strategy is likely to shrink further in the future, as the United States seeks conventional means to counter chemical, biological and ultimately nuclear threats. In addition, new transnational and regional threats, and the end of Soviet global reach and influence, have resulted in security problems that do not have clear U.S. nuclear solutions.

In November 1997, the Clinton administration acknowledged the changed and diminished role of nuclear weapons in a Presidential Decision Directive that emphasizes

survivable forces capable of certain retaliation. The new nuclear policy guidance embodies three important principles:

- ◆ ensuring that potential adversaries are certain that the use of nuclear weapons against the United States will fail;
- ◆ retention of retaliatory options so that the United States is not left with an all or nothing response;
- ◆ denouncement of a launch-on-warning strategy.

While long-standing, broad targeting options against Russia are not precluded, the directive signals the formal end to a U.S. nuclear warfighting strategy and suggests that post-Cold War problems require a different strategy: fundamental deterrence.

Fundamental Deterrence

Whereas Cold War nuclear warfighting strategy placed great value on the ability to land a disarming *first* blow, fundamental deterrence strategy prizes the landing of the *last* blow. As distinguished from Cold War strategies of mutual assured destruction and graduated response, fundamental deterrence rejects offensive use of nuclear weapons by relying upon smaller numbers of survivable, capable retaliatory forces and by prohibiting destabilizing, first-use weapons. The concept of fundamental deterrence is not new. It originated in 1988, during discussions between U.S. and Soviet scholars.^{xxviii} At the time, the theory seemed idealistic and academic. Since then, events and decisions have begun to establish many of its prerequisites. Adopting a fundamental deterrence strategy would be an evolutionary, not a revolutionary, undertaking.

Fundamental deterrence had as its basic premise the assertion that the United States and the Soviet Union posed to one another significantly greater nuclear threats than their mutual security and national security considerations required. If that was so in 1988, it is undoubtedly the case today. Redressing the imbalance between the threat and the forces assembled in response is possible now with smaller nuclear forces. Nuclear forces should be sized and structured so that both the United States and Russia are assured that the other retains credible retaliatory forces, thus preventing nuclear attack by guaranteeing its catastrophic consequences.

Fundamental deterrence strategy deters by promising punishment. The certainty of unacceptable retaliation obviates the need to retain strategies and nuclear forces that are essentially offensive and destabilizing during a crisis. During the Cold War, it was important to deny the adversary certainty of particular outcomes. Maintaining large numbers of vulnerable ICBMs on hair-trigger alert contributed to uncertainty. But under fundamental deterrence, uncertainty must always be avoided. Fortunately, much progress has been made since 1988 in reducing the number and weapon delivery capability of ICBMs.

Fundamental deterrence will succeed once potential adversaries are convinced that launching a nuclear attack is absolutely futile because catastrophic nuclear retaliation is an absolute certainty. To a great extent, that certainty depends upon the size, composition and survivability of the limited nuclear forces allowed by START.

Fundamental deterrence also relies upon assurances that the arms reductions and force structure changes necessary to achieve it initially are irreversible, except by means that would be time-consuming and detectable. Both the United States and Russia must believe that START reductions are permanent and that neither has the ability to assemble meaningful numbers of additional nuclear weapons quickly and covertly — the essence of the principles of irreversibility and transparency agreed at Helsinki. This condition cannot exist when one or both sides retain a massive reconstitution potential, nor when one or both sides rely upon forces and strategies that promote or are easily adaptable to nuclear warfighting. The United States took meaningful steps toward fundamental deterrence at the Helsinki Summit and last November, by means of the President's nuclear strategy directive.

Adopting fundamental deterrence requires a conceptual shift from one form of nuclear parity to another. Quantitative parity, mandated by Cold War strategy, should give way to qualitative parity between the United States and Russia.^{xxix} START sublimits helped make nuclear forces less destabilizing, but the forces are still significantly different. The United States increasingly relies upon SLBMs, while Russia possesses a large ICBM force including fixed and mobile missiles. There is some pressure to employ START III to compel greater convergence in force design, but with fundamental deterrence this is not necessary. It will be increasingly difficult for the sides to agree on identical force structures because their geographic, economic and political positions are so different.

The Helsinki accords and subsequent events suggest that a gradual transition to fundamental deterrence is underway now, although not as a result of decisions taken to adopt the strategy. The first indication is the apparent U.S. move away from nuclear warfighting to nuclear retaliation strategy. The second is U.S. and Russian perception that their strategic forces are less destabilizing than in the past, but still too large. The third is the acknowledged redundancy of certain components of the sides' strategic forces, an unnecessary and (especially for the Russians) needlessly expensive characteristic. Finally, there is the mutual understanding that elimination of delivery systems alone is no longer enough, and that achieving irreversible reductions requires nuclear weapons destruction. These developments should now be followed by bilateral efforts to further reduce the size and change the characteristics of strategic forces, steps necessary to implement fundamental deterrence strategy and preclude a sudden and secret return to warfighting strategies and forces.

START III as a Path to Fundamental Deterrence

START III can serve as the venue to establish formal, lasting fundamental deterrence between the United States and Russia. This achieved, it may subsequently be possible to reduce additional categories of nuclear forces, paving the way for MNRN.

The real significance of START III should rest in provisions that change the character of nuclear forces — by making them more survivable and stabilizing, not just smaller — and provisions that ensure that these changes are irreversible. Force reductions

must still comprise "above the waterline" features of START III. Central provisions for START III should:

- ◆ reduce and limit strategic forces in two stages: first to no more than 2,000 deployed nuclear warheads, and then to 1,000. No additional warhead sublimits should be established, and reducing SLBM MIRVs should be permitted.
- ◆ prohibit the most vulnerable, destabilizing and dangerous weapons: fixed ICBMs that are not protected by ABM Treaty-compliant defenses. Mobile, single warhead ICBMs would be permitted.

Measures to ensure irreversibility — "below the waterline" provisions with little or no previous START negotiating record — are just as important as the central limits and prohibitions. These measures must address asymmetries in Russian and U.S. nuclear infrastructure and the resultant concern that differences in production facilities, strategic stockpile sizes, and nonstrategic nuclear weapons inventories must be offset by a reconstitution hedge. Easing and eventually resolving breakout and reconstitution concerns should be done in conjunction with negotiating reduced force levels. START III should:

- ◆ be negotiated together with, and perhaps contingent upon, separate bilateral negotiations to reduce nonstrategic nuclear weapons. In time, these negotiations could be expanded to include other nuclear powers.
- ◆ include a definition for a nuclear "weapon" as a treaty-limited nuclear explosive device, rather than rely exclusively upon the terms "warhead" (which is a treaty accounting term and has no single precise Russian language translation) and "reentry vehicle" (which pertains to nuclear weapons only for ballistic missiles).
- ◆ require the rapid removal of nuclear weapons from prohibited ICBMs upon the treaty's entry into force, pending their elimination.
- ◆ establish bilateral visibility of strategic nuclear weapons inventories and infrastructures, recognizing the inherent differences between the U.S. and Russian establishments.
- ◆ require the destruction of nuclear weapons attributed to destroyed delivery systems.

Limits on strategic weapons inventories are every bit as important as weapons destruction. Strategic nuclear weapons stockpiles should be divided into three categories: deployed, nondeployed and excess. This approach is essentially the same as the method for delivery vehicles under START. START III would account for deployed weapons in the same manner as previous treaties: by attributing an agreed number of warheads to each type of deployed missile or bomber. It is important to retain the accounting term "warhead" for describing deployed weapons because an attribution rule precludes the need to count or inspect individual weapons on deployed delivery systems.

Nondeployed weapons should be limited to a finite number that is a percentage of the deployed force, dependent upon the technical requirement to rotate weapons

periodically for refurbishment. The smaller the allowed percentage, the smaller the breakout and reconstitution threat. It may be necessary or even desirable to establish different allowed levels of nondeployed weapons for different delivery systems; for example, a smaller percentage for mobile ICBMs and a larger number for bombers. Each side would declare the size and locations of its nondeployed weapons inventories, and they would be subject to on-site inspection. Those weapons not defined and treaty-limited as deployed or nondeployed would be declared excess and eventually eliminated. The elimination schedule need not be the same as the delivery vehicle elimination schedule, although weapons for prohibited delivery systems should be destroyed first.

Armed with these provisions, START III would facilitate the establishment of a fundamental deterrence regime in several ways. It would prohibit the system most closely associated with nuclear warfighting — undefended, silo-launched ICBMs — and place a premium on mobile and survivable systems. In so doing, it would remove much of the incentive for, and ability to conduct, a disarming first strike. By not establishing additional warhead sublimits and by permitting SLBM MIRV reduction, START III would allow each side to structure forces according to its perception of qualitative, not strictly quantitative, parity and would take into account important political, economic and geographic differences. Weapons destruction, inventory transparency and limits contribute to irreversible reductions, limiting breakout and reconstitution incentives and potential, and strengthening nuclear nonproliferation efforts. These provisions would increase the probability that neither side will revert to nuclear warfighting strategies. They would underscore the new and diminished role of strategic nuclear weapons in the post-Cold War world, increase crisis stability, and help establish conditions for subsequent reductions.

Strategic Forces Qualitative Parity

U.S. and Russian strategic forces should feature three defining characteristics: reliability, stability and survivability. Mobile, hard-to-detect systems are most supportive of fundamental deterrence, while fixed, undefended systems in fact threaten it. Strategic forces must be dispersed to complicate targeting, thus reducing the incentive for a first strike. As is the case for ICBMs under START II, START III-compliant SLBMs should carry fewer MIRVs to decrease the relative target value of each missile. Command and control must likewise be robust and survivable. Weapon systems and command and control modernization should be permitted, even encouraged, in order to improve reliability, stability and survivability.

This vision is at odds with nuclear warfighting and more consistent with present U.S. nuclear policy. Fundamental deterrence can further reduce the risk of nuclear war. Should a crisis develop between the United States and Russia, decisionmakers would have more time to decide whether the use of nuclear weapons is warranted, confident that their nuclear forces were survivable and not at risk to a first strike. Strategic forces need no longer be the locus for crisis, as was the case during the Cold War.

The projected organization of Russian forces accommodates transition to fundamental deterrence under START III. According to separate estimates prepared by Russian analysts Podvig and Miasnikov, the overwhelming number of Russian strategic forces should be SLBMs or mobile ICBMs by the year 2008, provided START II is implemented (see Appendix B). Only 8 to 15 percent of strategic forces will be comprised of fixed ICBMs, depending upon the number of SS-27 ICBMs that the Russians choose to deploy in fixed launchers. Elimination of approximately 170 fixed ICBMs — mostly older SS-19s — would leave Russia with a completely mobile strategic nuclear force. Remaining Russian SLBM and mobile ICBM forces would deploy approximately 1,300 weapons. Adding roughly 750 bomber weapons, Russia's strategic forces would number about 2,000 deployed weapons, the first-phase goal proposed for START III.

The resultant Russian forces would be survivable and supportive of fundamental deterrence. Responding to Duma questions about the survivability of the Russian SSBN force, researcher Miasnikov refuted claims of Russian SLBM vulnerability as follows:

- ◆ The extended range of sea-based missiles allows patrols in the waters of the Barents, Kara, and Okhotsk seas or in the Arctic, where opposing powers could not maintain sea or air dominance.
- ◆ The only manner in which opposing forces could strike a mobile, stealthy SSBN would be to perform continuous tracking.
- ◆ The analysis of water conditions in these areas yielded exceptionally short detection ranges, and only for small periods.
- ◆ The use of U.S. SSNs for continuous tracking of these submarines would be detectable and would allow Russia to take protective measures.^{xxx}

Although the projected Russian SSBN force would be small, carrying out a preemptive attack on the force would pose significant risk to the nation attempting it. The preemptive attack would have to be executed within approximately 30 minutes to prevent some SLBMs from being launched in retaliation. The Russian bomber force shows a steep decline during the period from 1990 to 2007, falling from 162 to a force of about 70. Given the age of the force, some bomber modernization would be necessary during the post-START III period.

Assuming that START II is not ratified by the Duma, attrition caused by age, START I compliance and lack of funds will result in a number of Russian deployed warheads within range of START III goals, though many would be deployed on MIRV'd ICBMs. It appears that Russia can transition to a START III-compliant strategic force that does not include fixed, undefended ICBMs, but ratification of START II is an important first step.

The United States can do likewise. Under START II, most U.S. strategic weapons will be based at sea. SSBN stealth gives SLBMs the greatest survivability of any U.S. strategic system. SLBMs also provide decisionmakers with forces that need not be committed rapidly and irrevocably. In a 1993 study of U.S. strategic weapons, the General

Accounting Office (GAO) reported that "submerged SSBNs are even less detectable than is generally understood, and that there appear to be no current or long-term technologies that would change this."^{xxx}

In terms of assured communications, ICBMs once enjoyed an advantage over SLBMs. This is no longer the case. The GAO study found essential equivalence between ICBM and SLBM communications, noting that submarine communications are "about the equal in speed and reliability of communications to ICBM silos."^{xxxii} Regarding range and accuracy, the D-5 SLBM is essentially equivalent to the latest U.S. ICBM, the Peacekeeper, which the United States intends to eliminate under START II. Prohibition of undefended, fixed ICBMs need not qualitatively diminish the retaliation capability of remaining U.S. forces. In 1993, then Secretary of Defense William Perry confirmed the equivalency of the D-5 to the Peacekeeper:

The Peacekeeper missile with the W-87 warhead and the Trident D-5 missile with the W-88 warhead share many of the same . . . attributes. The yield, accuracy, and range of both systems are essentially equivalent.^{xxxiii}

In testimony before the Senate Governmental Affairs Committee in June 1993, Secretary Perry supported the GAO findings. Though he did not specifically advocate any form of ICBM prohibition, he did state, "Trident turns out to be the dominant leg of the triad, and it is the one on which we depend the most," and, "we could get by very nicely with much smaller forces and a single leg."^{xxxiv}

In spite of their obvious disadvantages, fixed, undefended ICBMs have certain military and technical features, in addition to parochial "rice bowl" interests, that cause some to wish to retain them. ICBMs offer a measure of redundancy against a failure or sudden vulnerability in other strategic systems. It is beyond the scope of this paper to establish the probability of such developments, though they seem remote based on the preponderance of unclassified information available. In any event, fixed ICBMs provide additional rather than exclusive redundancy, and this comes at great risk and cost. It is unnecessary under a fundamental deterrence regime.

ICBMs also enable the United States and Russia to reconstitute nuclear weapons quickly. The dangers of this attribute have already been elaborated, and these are reasons to prohibit undefended, fixed ICBMs. From the perspective of the U.S. Strategic Command (STRATCOM) targeting officer, the footprint of SLBM warheads may be inadequate to provide adequate target coverage. It would probably be difficult to make that case if fundamental deterrence was the chosen U.S. strategy and potential targets were selected on the basis of retaliation rather than warfighting aims.

There is legitimate concern about the long-term survival of U.S. design and production infrastructure for missile propulsion, guidance and reentry systems. However, fixed ICBM prohibition would not cripple the infrastructure. In 1995 Dr. Paul Kaminski, Undersecretary of Defense, addressed the infrastructure issue, noting that there was considerable overlap of these technologies with growing commercial launch capabilities, that the continuing production of the D-5 missiles would sustain a significant base, and that

conversion of four submarines from C-4 to D-5 SLBMs would continue well past 2000.^{xxxv} The United States decided to scrap its most modern ICBMs in exchange for eliminating Russian heavy ICBMs in START II. With no new fixed ICBMs forecast and given the D-5 program's long-term outlook, cancellation of Minuteman modernization is a minor sacrifice. After all, sustainment of the industrial base should be predicated on the contributions of the ICBM force, not vice versa. U.S. development of a new, mobile ICBM would still be permissible — even desirable — under START III, to the benefit of U.S. missile infrastructure. And the United States could retain some fixed ICBMs, provided they were defended.

Finally, missile technology proliferation implies that nations other than Russia and China may eventually pose a ballistic missile threat to the United States, encouraging us to preserve ICBMs. However, that future threat can be countered in part by missile defenses already under consideration as well as mobile, survivable nuclear and conventional weapons. The best defense against a ballistic missile is clearly not a fixed, vulnerable ICBM.

Admittedly, SLBM warhead footprint limits and strategic system redundancy must be considered when structuring START III forces. Others must make the case that there is adequate justification to retain a small ICBM force for these reasons. Should U.S. decisionmakers be so persuaded, it is vital that the ICBMs be mobile or protected by ABM Treaty-compliant defenses. To permit otherwise would corrupt a fundamental deterrence strategy.

To enhance survivability by means of dispersing forces through the depths of two oceans simultaneously, the United States should retain 14 Trident D-5 submarines. Reducing below that number would make two-ocean capability increasingly expensive. Basing D-5 SSBNs at Bremerton, Washington, also provides an additional response to emerging Asian threats. To comply with stepped START III reductions, D-5 MIRVs should be reduced initially to four per missile, then even lower.

Bombers have always been the most flexible and the only recallable strategic weapon. B-52H airframes should last until approximately 2035. A number of B-52s armed with modern air-launched cruise missiles (ALCMs) should be retained through the first phase of START III reductions, then converted to strictly conventional operations. B-2s will be entering operational service this year, and have a anticipated service life of at least 25 years. Their unique offensive and defensive attributes provide decisionmakers with retaliation capability against any state that chooses to use weapons of mass destruction, a capability that should be preserved under START III.

START III must permit modernization while requiring reductions in overall strategic forces. Even after planned upgrades for Minuteman IIIs are completed, the missiles must be modernized again or replaced around 2025. In the case of Ohio-class SSBNs, the submarines will begin refueling/replacement cycles in the 2015 period. With upgrades, SSBN lifetime may be greater than the 25.6-year GAO forecast. One possibility for eventual Ohio-class replacement is to design a hull insert for the new attack submarine to allow it to launch the D-5 missile. This could enable even greater dispersion of the

SLBM force, with fewer missiles per submarine and fewer weapons per missile. With further improvements in quieting technology likely, tomorrow's U.S. SSBN force should be even more survivable.

For Russia, modernization could allow replacement of older ICBMs with mobile versions of the SS-27 and quicker deployment of Yuri Dolgorukii-class SSBNs. These programs are already slowly underway, and modernization along these lines may not be prohibitively expensive given the lower overall START III limits. Because START III would specify no sublimits on the type of mobile systems deployed, the United States and Russia could develop a secure, suitable blend of land-based mobile or fixed, defended ballistic missiles, bombers and SLBMs within the restrictions of overall limits. That flexibility is important to fundamental deterrence. Appendix C contains START III-compliant U.S. and Russian force structure models that support fundamental deterrence.

Economic Considerations

The end of the Cold War world altered U.S. national priorities, yielded a different threat environment, and sharpened incentives for even smaller strategic nuclear forces. Spending for nuclear programs remains a necessary investment for the immediate future. Yet there are potential cost savings that can result from adopting a fundamental deterrence force structure under START III.

Changes to strategic nuclear forces have already resulted in some cost savings and could result in even more, depending upon how the reductions required by START III are carried out. The United States spent \$33 billion on nuclear forces in 1995, reflecting budgets of \$21 billion for the Department of Defense and \$12 billion for the Department of Energy.^{xxxvi} The Pentagon budgeted just over \$8 billion for operation and maintenance in fiscal year 1997 and beyond,^{xxxvii} not including the costs associated with command and control, system upgrades, research and development, and the cooperative threat reduction program. Senator Pete Domenici included these items when he estimated nuclear weapons costs of \$30 billion for fiscal year 1997.^{xxxviii}

Potential direct START III savings include operation and maintenance expenses for systems that are eliminated and indirect cost reductions from dismantling infrastructure required to support those systems. Eliminating force structure by evenly cutting each of the three triad legs reduces operation and maintenance costs but has limited impact on infrastructure costs. The GAO estimated ICBM operation and maintenance costs to be approximately \$12 billion between 1992 and 2010.^{xxxix} Prohibiting undefended, fixed ICBMs can generate substantial savings by eliminating the indirect costs associated with ICBM infrastructure, provided the United States chooses not to develop a mobile ICBM.

Infrastructure costs are associated with maintaining bases, life extension acquisition programs, weapons maintenance and storage facilities, training programs for operation and maintenance crews, and weapon systems test and engineering facilities and staff. By eliminating fixed ICBMs, three Air Force bases (F.E. Warren, Malmstrom, and Minot) could be closed, greatly reduced in size and scope, or converted to other missions. The

GAO estimated the cost of ICBM life extension and upgrade programs by the Department of Energy to be \$4.5 billion for the period 1992 to 2010.^{xi} By eliminating some types of weapons, the Department of Energy can reduce the infrastructure needed to maintain, enhance, test and refurbish ICBM warheads.

Since the proposed START III provisions allow great flexibility in force design, actual cost savings are difficult to forecast precisely. Should the United States decide to deploy defenses for fixed ICBMs or develop a mobile ICBM, overall savings could be negligible. But past accords suggest that START III savings could be great. Secretary Perry, addressing the Russian Duma in October 1996, estimated U.S. savings through 2003 for START II at \$5 billion.^{xii} A GAO report released in May 1997 estimated the savings associated with a reduction to 1,000 warheads to be \$22 billion through the year 2010.^{xiii} This is not to say that cost savings alone justify fixed ICBM prohibition, only that the savings incident to a START III-compliant, fundamental deterrence force could be significant.

Single-warhead ICBMs are no bargain, be they fixed or mobile. The 1992 GAO study compared life-cycle costs for the D-5 and the Minuteman III (excluding sunk costs for both) in terms of the price of putting weapons on target. The comparison revealed that the D-5 is the more cost-effective system. Given START II's ICBM MIRV prohibition and allowing some degree of SLBM MIRVing under START III, the D-5 is the more cost-effective ballistic missile based on cost and force level data for the period 1992 to 2020. The following table illustrates the comparison:

Cost per Warhead per Year for Minuteman III and Trident D-5
(with one warhead per Minuteman III and four per D-5)^{xliii}

System	Assumed Life Cycle from 1992	Life-cycle Cost to Go	Number of Warheads	Dollars per Warhead	Dollars per Warhead per year
MM III	18 Years to the year 2010	\$16.5B	500	\$33M	\$1.83M
MMIII	28 Years to the year 2020	\$23B	500	\$46M	\$1.64M

Trident D-5	25.6 years for each SSBN	\$58B	1,728	\$33.6M	\$1.31M
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The same is true for Russian forces. Miasnikov found that:

With the ratification of the Start-II treaty and the resulting elimination of land-based multiple warhead missiles, the cost of deploying one warhead on land will be significantly higher than on the ocean, as opponents of NSNF [Naval Strategic Nuclear Forces] admit as well. . . . Spending on support of one warhead in the SRF [Strategic Rocket Forces] to 2010 will be 3.5 times more than in the NSNF.^{xliv}

Not only is fundamental deterrence a safer, more suitable nuclear strategy, it can be less expensive for both Russia and the United States to sustain.

Conclusion

START III presents the United States and Russia with an opportunity to reduce the size and alter the characteristics of the world's two largest nuclear arsenals. Although the United States could base a START III-compliant force on its Cold War triad, this would perpetuate outdated force structure and doctrine while requiring additional expenditures on the most destabilizing strategic weapons, fixed ICBMs. France and Great Britain have already abandoned their redundant triads and rely exclusively on SSBNs. Russia and the United States can capitalize on this opportunity to shape the strategic environment by adopting complementary strategies of fundamental deterrence. A strategy that emphasizes assured retaliation over uncertain nuclear warfighting is appropriate for the post-Cold War environment, in which nuclear weapons play an important but nevertheless diminished role in U.S. national security.

START III provisions should facilitate this strategy by means of irreversible reductions that promote more stabilizing forces. This may be accomplished in part by requiring nuclear weapons destruction and inventory controls. Deployed and nondeployed weapons must be subject to START restrictions, as is now the case with their associated delivery vehicles. Banning undefended, fixed ICBMs would eliminate the most vulnerable and lucrative targets for an offensive strike, which would further reduce the need for warfighting doctrine and weapons. START III-compliant forces should feature reliability, survivability (a consequence of mobility and greater dispersion), stability, and secure command and control links. The negotiated forces must also be permitted, even encouraged, to modernize in a fashion that strengthens these characteristics over time.

START III can alleviate concerns about treaty breakout and strategic forces reconstitution. Beginning separate negotiations to reduce nonstrategic nuclear weapons, together with the declaration and control of nondeployed strategic nuclear weapons under

START, are important first steps in this direction. The dialogue must focus on the most significant differences, namely the hot production capability of the Russian ballistic missile and nuclear weapons infrastructure, and the massive reconstitution capability of the United States. Linking these two and agreeing to limits on nondeployed strategic nuclear weapons is essential to both breakout prevention and the implementation of the irreversibility principle agreed at Helsinki. Should the United States fail to find adequate common ground on this matter with Russia, or should the Russian government and its foreign policy become hostile to the United States, then the United States should not seek a START III agreement.

START III should advocate the concept of qualitative parity in lieu of strict quantitative parity. U.S. and Russian strategic forces need not be identical for them to ensure credible retaliation. Permitting the Russians to retain single-warhead mobile ICBMs while the United States sustains its advantages in MIRV'd SLBMs would be an acceptable outcome of START III. Given the range and accuracy of the D-5 SLBM, and considering its much greater survivability compared to the Minuteman III, U.S. ICBMs are unnecessarily redundant. A U.S. SLBM and bomber force would arm decisionmakers with a reliable, survivable and flexible deterrent.

The benefits derived from adopting fundamental deterrence, ranging from increased mutual security with reduced numbers of nuclear weapons to possible U.S. defense budget savings, will continue into the next century and may help establish conditions for more encompassing reductions in global nuclear stockpiles. Fundamental deterrence must be fundamental to START III.

Appendix A

Joint Statement on Parameters on Future Reductions in Nuclear Forces

The White House, Office of the Press Secretary, March 21, 1997

Presidents Clinton and Yeltsin underscore that, with the end of the Cold War, major progress has been achieved with regard to strengthening strategic stability and nuclear security. Both the United States and Russia are significantly reducing their nuclear forces. Important steps have been taken to detarget missiles. The START I Treaty has entered into force, and its implementation is ahead of schedule. Belarus, Kazakhstan, and Ukraine are nuclear-weapon free. The Nuclear Non-Proliferation Treaty was indefinitely extended on May 11, 1995, and the Comprehensive Nuclear Test Ban Treaty was signed by both the United States and Russia on September 24, 1996.

In another historic step to promote international peace and security, President Clinton and President Yeltsin hereby reaffirm their commitment to take further concrete steps to reduce the nuclear danger and strengthen strategic stability and nuclear security. The Presidents have reached an understanding on further reductions in and limitations on strategic offensive arms that will substantially reduce the roles and risks of nuclear weapons as we move forward into the next century. Recognizing the fundamental significance of the ABM Treaty for these objectives, the Presidents have, in a separate joint statement, given instructions on demarcation between ABM systems and theater missile defense systems, which will allow for deployment of effective theater missile defenses and prevent circumvention of the ABM Treaty.

With the foregoing in mind, President Clinton and President Yeltsin have reached the following understandings:

Once START II enters into force, the United States and Russia will immediately begin negotiations on a START III agreement, which will include, among other things, the following basic components:

- ◆ Establishment, by December 31, 2007, of lower aggregate levels of 2,000 to 2,500 strategic nuclear warheads for each of the parties.
- ◆ Measures relating to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warheads and any other jointly agreed technical and organizational measures, to promote the irreversibility of deep reductions including prevention of a rapid increase in the number of warheads.
- ◆ Resolving issues related to the goal of making the current START treaties unlimited in duration.
- ◆ Placement in a deactivated status of all strategic nuclear delivery vehicles which will be eliminated by START II by December 31, 2003, by removing their nuclear warheads

or taking other jointly agreed steps. The United States is providing assistance through the Nunn-Lugar program to facilitate early deactivation.

The Presidents have reached an understanding that the deadline for the elimination of strategic nuclear delivery vehicles under the START II Treaty will be extended to December 31, 2007. The sides will agree on specific language to be submitted to the Duma and, following Duma approval of START II, to be submitted to the United States Senate.

In this context, the Presidents underscore the importance of prompt ratification of the START II Treaty by the State Duma of the Russian Federation.

The Presidents also agreed that in the context of START III negotiations their experts will explore, as separate issues, possible measures relating to nuclear long-range sea-launched cruise missiles and tactical nuclear systems, to include appropriate confidence-building and transparency measures.

Taking into account the understandings outlined above, and recalling their statement of May 10, 1995, the Presidents agreed the sides will also consider the issues related to transparency in nuclear materials.

Appendix B

START II-Restricted U.S. and Russian Strategic Forces

Under START II, the United States will draw down to and maintain a strategic triad comprised of:^{xlv}

- ◆ 500 Minuteman III ICBMs, equipped with one warhead each;
- ◆ 14 Ohio-class SSBNs carrying 24 Trident D-5 SLBMs, equipped with MIRVs;
- ◆ 72 B-52H strategic bombers equipped with ALCMs;
- ◆ 21 B-2 strategic bombers equipped with gravity bombs.^{xlvi}

Russian strategic forces under START II are expected to be comprised of:^{xlvii}

- ◆ 105 SS-19 ICBMs, equipped with one warhead each;
- ◆ 233 SS-25 mobile ICBMs, equipped with one warhead each;
- ◆ 65 SS-27 ICBMs, equipped with one warhead each;
- ◆ 5 Delta IV-class SSBNs carrying 12 SS-N-23 SLBMs, equipped with MIRVs;
- ◆ 3 Typhoon-class SSBNs carrying 20 SS-N-20 SLBMs, equipped with MIRVs;
- ◆ 63 TU-95 strategic bombers equipped with ALCMs;
- ◆ 8 TU-160 strategic bombers equipped with ALCMs.^{xlviii}

Appendix C

START III-Compliant Force Structure Models

The following examples illustrate various U.S. and Russian START III force structures that are consistent with fundamental deterrence strategy. These examples do not take into account the details of target coverage that can only be evaluated in a classified report.

United States

Interim 2,000-Warhead Force Without ICBMs

- ◆ 14 Trident SSBNs; 24 SLBMs with 4 warheads each (1,344)
- ◆ 16 B-2s (320)
- ◆ 42 B-52Hs attributed with 8 ALCMs (internal storage only) (336)

Endstate 1,000-Warhead Force Without ICBMs

- ◆ 14 Trident SSBNs; 24 SLBMs with 2 warheads each (672)
- ◆ 16 B-2s (320)

Interim 2,000-Warhead Force With Defended/Mobile ICBMs

- ◆ 14 Trident SSBNs; 24 SLBMs with 4 warheads each (1,344)
- ◆ 16 B-2s (320)
- ◆ 24 B-52Hs attributed with 8 ALCMs (internal storage only) (192)
- ◆ 140 single-warhead ICBMs, fixed and defended by an ABM system located at a single base or mobile

Endstate 1,000-Warhead Force With Defended/Mobile ICBMs

- ◆ 14 Trident SSBNs; 24 SLBMs with 2 warhead each (672)
- ◆ 14 B-2s (280)
- ◆ 48 single-warhead ICBMs, fixed and defended by an ABM system located at a single base or mobile

Russia

Interim 2,000-Warhead Force With Defended/Mobile ICBMs

- ◆ 9 SSBNs, 920 warheads
- ◆ Mix of heavy bombers carrying no more than 700 weapons
- ◆ 105 single-warhead, fixed SS-19/27 ICBMs defended by an ABM system located at a single base
- ◆ 275 SS-25/27 mobile ICBMs

Endstate 1,000-Warhead Force With Defended/Mobile ICBMs

- ◆ 10 SSBNs, 500 warheads
- ◆ Mix of heavy bombers carrying no more than 250 weapons
- ◆ 50 single-warhead, fixed ICBMs defended by an ABM system located at a single base

♦ 200 mobile ICBMs

Glossary

ABM	Anti-Ballistic Missile
ALCM	Air-launched cruise missile
CTBT	Comprehensive Test Ban Treaty
GAO	General Accounting Office
GDP	Gross Domestic Product
ICBM	Intercontinental ballistic missiles
INF	Intermediate-Range Nuclear Forces
MIRV	Multiple, independently-targetable reentry vehicle
MNRN	Multilateral nuclear reduction negotiations
NDP	National Defense Panel
NSNF	Naval Strategic Nuclear Forces
SALT	Strategic Arms Limitation Treaties
SLBM	Submarine-launched ballistic missiles
SRF	Strategic Rocket Forces
SSBN	Naval designation for strategic nuclear-powered fleet ballistic missile submarine
SSN	Naval designation for nuclear-powered attack submarine
START	Strategic Arms Reduction Talks

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